

REMARKS

In the Office Action of 5/31/2005, the Examiner objected to the abstract and rejected pending claims 2-10. In this response, claims 11-13 have been added. Accordingly, claims 2-13 will be pending after entry of this Amendment.

5 I. Objection to the Abstract:

In the Office Action, the Examiner objected to the abstract as exceeding the 150 word limit. The abstract has been amended in accordance with the Examiner's objection.

II. Rejections Under 35 U.S.C. 112

10 In the Office Action, the Examiner rejected claim 5 under 35 U.S.C. 112, first paragraph, as having an open-ended range not being disclosed in the specification. Claim 5 has been amended to address the Examiner's rejection thereof. Specifically, claim 5 has been amended to recite the MEMS structure of claim 2, wherein each torsional element has a length having a value equal to or greater than 5 μ m and equal to or less than 20 μ m. This range of values for the length dimension is disclosed in the specification and drawings. For example, paragraph 0067 of the
15 specification states: "Embodiments of the present invention for i have to be at least 2 μ m but not greater than 20 μ m." Further, paragraph 0065 of the specification defines "i" as length 1303 which is illustrated in FIG. 13b.

III. Rejections Under 35 U.S.C. 102

20 In the Office Action, the Examiner rejected claims 2-7 and 10 as being anticipated by Drake et al. (U.S. Patent No. 6,128,122, hereinafter Drake). The Examiner also rejected claims 2-3, 7, and 9-10 as being anticipated by Smits (WO 00/55666, hereinafter Smits). The Applicants have amended claim 2 and, as the rejection might be applied to the amended claim, respectfully

traverse. Claim 2 as amended recites a MEMS structure on a substrate, the MEMS structure comprising:

an actuator body connected with a suspension system; and
the suspension system connected with the substrate, the suspension system
5 comprising:
a set of one or more flexures, each flexure connecting the actuator body
with the substrate; and
a set of one or more torsional elements, wherein each torsional element
10 connects a corresponding flexure with the actuator body and provides strain relief
between the corresponding flexure and the actuator body, each torsional element
having a length comprising the distance from the corresponding flexure to the
actuator body, the length being greater than the width of the torsional element,
wherein the width of the torsional element is less than the width of the
15 corresponding flexure.

Applicants submit that neither Drake nor Smits, alone or in combination, disclose, teach,
or even suggest each recited feature of claim 2. For example, Drake and Smits do not disclose,
teach, or even suggest a torsional element having a length comprising the distance from the
corresponding flexure to the actuator body, the length being greater than the width of the
20 torsional element, wherein the width of the torsional element is less than the width of the
corresponding flexure.

In the Office Action, the Examiner stated that Drake disclosed flexures 306 having
torsional elements where the portion labeled 441 has a thinner cross-section than the portion
adjacent the platform 220. As shown in Figures 10 and 14 of Drake, however, the portion labeled
25 441 (having width W_h) is connected with the substrate frame 346 and does not connect a flexure
with an actuator body. Thus the portion labeled 441 does not correspond to the torsional element
of claim 2, since the torsional element of claim 2 connects a corresponding flexure with the
actuator body. Rather, in Drake, the larger portion having width W_p is connected with the
actuator body 220 (as shown in Figures 10 and 14 of Drake). As stated by the Examiner and as
30 shown in Figure 14 of Drake, the width W_p is larger than width W_h of portion 441. As such,

Drake does not teach or suggest a torsional element having a width that is less than the width of the corresponding flexure, as required in claim 2. Also, Drake does not teach or suggest that the length of the torsional element (comprising the distance from the corresponding flexure to the actuator body) is greater than the width of the torsional element.

5 Smits also does not teach or suggest each limitation of amended claim 2. For example, as shown in Figure 12 of Smits, the torsional element 112 has a width that is greater than the corresponding flexure 110 that it connects with the actuator body 108. Further, Smits does not teach or suggest that the length of the torsional element 112 (comprising the distance from the corresponding flexure to the actuator body) is greater than the width of the torsional element.

10 Claims 3-7 and 9-10 are dependent upon claim 2 and are allowable for at least the same reasons as claim 2. Further, claim 9 recites the MEMS structure of claim 2, wherein:

15 the suspension system further comprises a set of one or more anchor points, wherein each anchor point connects a corresponding flexure to the substrate and has an angle of twist per unit moment value substantially equal to a first value; and

 each torsional element has an angle of twist per unit moment value substantially equal to a second value, wherein the second value is greater than the first value.

20 Applicants submit that neither Drake nor Smits, alone or in combination, disclose, teach, or even suggest the additional features of claim 9. In fact, neither Drake nor Smits even discuss an anchor point that connects a flexure to the substrate. Applicants respectfully request that the Examiner specify the precise portion(s) of the cited references that disclose an anchor point and a comparison of the angle of twist per unit moment value of the anchor point to the angle of twist
25 per unit moment value of a torsional element.

IV. Rejections Under 35 U.S.C. 103

In the Office Action, the Examiner rejected claim 8 as being unpatentable over Drake or Smits. Claim 8 is dependent upon claim 2 and is allowable for at least the same reasons as claim 2.

5 V. New Claims 11-13

New claims 11-13 are dependent upon claim 2 and are allowable for at least the same reasons as claim 2.


CONCLUSION

Based on the foregoing remarks, Applicants believe that the rejections and objections in the Office Action of 5/31/2005 are fully overcome and that the application is in condition for allowance. If the Examiner has any questions regarding the case, the Examiner is invited to
5 contact Applicants' undersigned representative at the number given below.

Respectfully submitted,

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